

Application No. 09/412,738
Amendment "B" dated the 20th day of October, 2003
Reply to Office Action of August 5, 2003

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Sub 17

1. (Currently Amended) In a system capable of replicating a server copy of a resource stored on one or more servers with a client copy of the resource stored on one or more clients, a method for resolving a resource conflict so that the client copy of the resource can be updated to the one or more servers without fear of overwriting any changes made to the resource by another client, the method comprising the steps of:

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~~detecting, by the server, that the resource on the server conflicts with the copy of the resource on a client;~~

rather than comparing the client copy of the resource to the server version of the resource, determining that a conflict exists between the server copy of the resource and the client copy of the resource if a server resource tag that is representative of the server copy of the resource does not match a client resource tag that is representative of the client copy of the resource;

determining, at the server, whether the server can resolve the conflict between the server copy of the resource and the client copy of the resource into a single version of the resource;

creating, by the server, a conflict resource, if the conflict cannot be resolved at the server;

evaluating, at the client, whether the conflict resource can be resolved into a single version of the resource in accordance with a schema of the client if the conflict was not resolved at the server; and

presenting the conflict resource to a user if the conflict resource cannot be resolved by the client.

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2. (Canceled) A method as defined in claim 1, wherein the step of detecting further comprises the step of comparing a client resource tag, provided by the client, with a server resource tag.

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3. (Canceled) A method as defined in claim 2, wherein the client resource tag is representative of a version of the resource.

4. (Canceled) A method as defined in claim 2, wherein the server resource tag is representative of a version of the resource.

5. (Original) A method as defined in claim 1, wherein the step of determining further comprises the step of resolving the conflict at the server.

6. (Original) A method as defined in claim 1, wherein the step of determining further comprises the step of comparing the client copy of the resource with the server copy of the resource.

7. (Original) A method as defined in claim 1, wherein the conflict resource comprises the server copy of the resource and the client copy of the resource.

8. (Original) A method as defined in claim 1, wherein the step of evaluating further comprises the step of resolving the conflict at the client in accordance with the schema.

9. (Original) A method as defined in claim 1, further comprising the steps of:
uploading the resolved conflict resource to the server; and
returning a new resource tag to the client from the server.

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10. (Currently Amended) In a system having multiple copies of a resource, a method for detecting and resolving a conflict between a client copy of the resource and a server copy of the resource so that the client can upload the client copy of the resource to the server without fear of overwriting any changes made to the server copy of the resource by another client, the method comprising the steps of:

receiving, from the client, a client resource tag at the server, wherein the client resource tag identifies a client version of the client copy of the resource;

determining, by the server, whether the client resource tag matches the a server resource tag, wherein the server resource tag identifies a server version of the server copy of the resource;

rather than comparing the client copy of the resource to the server version of the resource, determining that a conflict exists if the client resource tag does not match the server resource tag; and

executing a server level of conflict resolution between the client copy of the resource and the server copy of the resource at the server in order to resolve the server copy and client copy of the resource into a single version of the resource.

11. (Canceled) A method as defined in claim 10, wherein the step of determining by the server further comprises the step of comparing the client resource tag with the server resource tag.

12. (Currently Amended) A method as defined in claim 10, wherein the client resource tag is ~~transmitted to~~ received at the server in a PUT method.

13. (Original) A method as defined in claim 10, further comprising the step of initiating the conflict detection from the client.

14. (Original) A method as defined in claim 10, wherein the step of executing a server level of conflict resolution further comprises the step of comparing the client copy of the resource with the server copy of the resource.

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15. (Canceled) A method as defined in claim 14, further comprising the step of resolving the conflict if the client copy of the resource matches the server copy of the resource.

16. (Original) A method as defined in claim 14, further comprising the step of resolving the conflict in accordance with a schema known to the server.

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17. (Canceled) In a system having one or more server copies of a resource and one or more client copies of a resource, a method for resolving a conflict between a server copy of the resource and a client copy of the resource into a single version of the resource, the method comprising the steps of:

receiving, from a server, a conflict resource at a client; and

executing a client level of conflict resolution between the client copy of the resource and the server copy of the resource at the client in order to resolve the server copy and client copy of the resource into a single version of the resource.

18. (Currently Amended) A ~~method-computer program product~~ as defined in claim 1740, wherein the conflict resource comprises the server copy of the resource.

19. (Currently Amended) A ~~method-computer program product~~ as defined in claim 1740, wherein the conflict resource comprises the server copy of the resource and the client copy of the resource.

20. (Currently Amended) A ~~method-compute program product~~ as defined in claim 1740, wherein the conflict resource comprises a set of differences existing between the server copy of the resource and the client copy of the resource.

21. (Currently Amended) A ~~method-computer program product~~ as defined in claim 1740, wherein the conflict resource comprises information useful to the client for resolving the conflict.

22. (Canceled) A method as defined in claim 17, further comprising the step of detecting a conflict by a server.

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23. (Canceled) A method as defined in claim 17, further comprising the step of detecting a conflict by comparing a client resource tag with a server resource tag, wherein the client resource tag is representative of a version of the client copy of the resource and the server resource tag is representative of a version of the server copy of the resource and a conflict is detected if the client resource tag and the server resource tag do not match.

24. (Currently Amended) A ~~method~~computer program product as defined in claim 1740, further comprising ~~the step of~~program code means for executing a server level of conflict resolution.

25. (Currently Amended) A ~~method~~computer program product as defined in claim 24, wherein the ~~step of~~program code means for executing a server level of conflict resolution further comprises ~~the step of~~program code means for resolving the conflict.

26. (Canceled) A method as defined in claim 17, wherein the step of executing a client level of conflict resolution further comprises the step of resolving the conflict in accordance with a schema known to the client.

27. (Currently Amended) A ~~method~~computer program product as defined in claim 1740, wherein the ~~step of~~further comprising program code means for executing a client level of conflict resolution ~~further which~~ comprises the ~~step of~~program code means for comparing the changes made to the client copy of the resource and the server copy of the resource.

28. (Currently Amended) A ~~method~~computer program product as defined in claim 1740, wherein the ~~step of~~executing a client level of conflict resolution further comprises the step of~~further comprising~~ program code means for uploading the resolved conflict resource to the server.

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29. (Currently Amended) A ~~method~~computer program product as defined in claim 28, further comprising the ~~step of~~program code means for returning to the client a new resource tag, wherein the new resource tag identified the current version of the server copy of the resource and the client version of the resource.

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30. (Canceled) In a system capable of replicating resources from one or more servers to one or more clients, a method for resolving a conflict, the method comprising the steps of:
detecting the conflict, wherein detecting the conflict comprises the steps of:
transmitting a client resource tag to a server;
comparing, by the server, the client resource tag with a server resource tag; and
determining that there is a conflict between a client copy of a resource and a server copy of the resource if the client resource tag does not match the server resource tag; and
executing one or more levels of conflict resolution until the conflict is resolved into a single version of the resource.

31. (Currently Amended) A ~~method-computer program product~~ as defined in claim 3042, wherein a first level of conflict resolution is a server level of conflict resolution, a second level of conflict resolution is a client level of conflict resolution and a third level of conflict resolution requires an end user to resolve the conflict.

32. (Currently Amended) A ~~method-computer program product~~ as defined in claim 31, wherein the ~~step-of~~program code means for executing one or more levels further comprises the ~~step-of~~program code means for executing the server level of conflict resolution at the server.

33. (Currently Amended) A ~~method-computer program product~~ as defined in claim 31, wherein the ~~step-of~~program code means for executing one or more levels further comprises the ~~step-of~~program code means for executing the client level of conflict resolution at the client.

34. (Currently Amended) A ~~method-computer program product~~ as defined in claim 31, wherein the ~~step-of~~program code means for executing one or more levels further comprises the ~~step-of~~program code means for executing the third level of conflict resolution.

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35. (Canceled) A method as defined in claim 30, wherein the step of executing one or more levels further comprises the step of resolving the conflict into the single version of the resource.

36. (Currently Amended) A ~~method-computer program product~~ as defined in claim 3042, wherein the ~~step of program code means for~~ executing one or more levels further comprises the ~~step of program code means for~~ resolving the conflict in accordance with a schema.

37. (Currently Amended) A ~~method-computer program product~~ as defined in claim 36, wherein the schema is known to the server.

38. (Currently Amended) A ~~method-computer program product~~ as defined in claim 36, wherein the schema is known to the client.

39. (Currently Amended) A ~~method-computer program product~~ as defined in claim 3042, wherein the ~~step of program code means for~~ executing one or more levels further comprises the ~~steps of program code means for~~ uploading the resolved resource to the server and transmitting a new resource tag to the client.

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40. (Currently Amended) In a system capable of ~~replication-replicating~~ a resource from one or more server to one or more clients, a computer program product for implementing a method for detecting and resolving resource conflicts so the one or more clients can upload the resource to the one or more servers without fear of overwriting any changes made to the resource by another client, the computer program product comprising:

a computer readable medium carrying computer executable instructions for implementing the method, wherein the computer executable instructions comprise:

~~program code means for detecting a resource conflict;~~

program code means for comparing a client resource tag with a server resource tag, wherein the client resource tag and the server resource tag are each representative of a version of the resource;

~~program code means for determining that no conflict exists between a client version of the resource and a server version of the resource if the client resource tag and the server resource tag match, without having to compare the client version of the resource to the server version of the resource;~~

program code means for resolving ~~the a~~ conflict at the server into a single version of the resource if the client resource tag and server resource tag fail to match;

program code means for creating a conflict resource if the conflict cannot be resolved at the server;

program code means for resolving the conflict at the client into a single version of the resource by evaluating the conflict resource in accordance with a schema known to the client; and

program code means for presenting the conflict resource to an end user for conflict resolution if the client cannot resolve the conflict .

41. (Original) A computer program product as in claim 40, wherein the computer executable instructions further comprise program code means for:

uploading the resolved conflict resource to the server; and
providing the client with a new resource tag.

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42. (Currently Amended) In a system capable of replicating a resource between a client and a server, a computer program product for implementing a method for of detecting and resolving a conflict between a client copy of the resource and a server copy of the resource, so that the client can upload the resource to the server without fear of overwriting any changes made to the resource by another client, the computer program product comprising:

a computer readable medium carrying computer executable instructions for implementing the method, wherein the computer executable instructions comprise:

program code means for transmitting-receiving a client resource tag to at a server, the client resource tag identifying a client version of the client copy of the resource;

program code means for comparing, by the server, the client resource tag with a server resource tag that identifies a server version of the server copy of the resource;

program code means for rather than comparing the client copy of the resource to the server version of the resource, determining that there is a conflict between a the client copy of a the resource and a the server copy of the resource if the client resource tag does not match the server resource tag; and

program code means for executing one or more levels of conflict resolution until the conflict is resolved into a single version of the resource.

43. (Previously Presented) A computer program product as in claim 42, wherein the computer executable instructions further comprise program code means for:

executing a server level of conflict resolution to resolve a server copy of a resource and a client copy of a resource having one or more conflicts into a single version of the resource;

executing a client level of conflict resolution to resolve a server copy of a resource and a client copy of a resource having one or more conflicts into a single version of the resource; and

executing a third level of conflict resolution to thereby resolve a server copy of a resource and a client copy of a resource having one or more conflicts into a single version of the resource.